

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. 10/667,626

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METHOD AND SYSTEM FOR OPERATING
A DEGRADED VEHICLE COMMUNICATION UNIT

Filed via EFS

Filed: September 22, 2003

Group Art Unit: 2618

Examiner: Tuan Hoang Nguyen

Attorney Docket No. GP-303941-OST-ALS

APPEAL BRIEF

Board of Patent Appeals and Interference
US Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313-1450

Sir:

This Appeal Brief is being filed in support of Appellants' appeal of the rejections made in the Final Office Action dated September 25, 2007.

(i) Real Party in Interest

The real party in interest is the assignee of the appellant inventors (Appellants) who assigned all right, title and interest to General Motors Corporation, a Michigan corporation, having its principal place of business at 300 Renaissance Center, Detroit, Michigan 48265-3000.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences known to the Appellants, their assignee, and/or legal representatives that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

(iii) Status of Claims

Claims 22-39 are pending and all stand rejected under 35 U.S.C. §103(a). The application does not contain any other claims. The rejections of these claims 22-39 are being appealed.

(iv) Status of Amendments

No amendments have been filed subsequent to the Final Office Action.

(v) Summary of Claimed Subject Matter

In accordance with 37 CFR 41.37(c)(1)(v), a concise explanation is provided below of subject matter defined in each of the independent claims involved in this appeal, with reference to the specification by page and line numbers and to the drawings by reference characters.

Independent Claim 22 –

Independent claim 22 generally pertains to a method 300 for operating a vehicle communication unit 110 within a mobile vehicle communication system 100, 200. (Figs. 1-3, pages 8-13) In general, the method 300 comprises the following steps:

attempting to operate in a primary communication mode using a vehicle communication unit 110 on a first vehicle 211, wherein the communication unit is equipped to communicate in the primary communication mode; (Figs. 2-3, Block 211; Page 8, Lines 16-17; Page 12, Lines 11-14)

detecting a primary communication mode failure; (Figs. 2-3, Block 320; Page 9, Lines 26-28; Page 12, Lines 9-10)

initiating short range wireless communication between the first vehicle 211 and a second vehicle 210 responsive to the primary communication mode failure, wherein the second vehicle 210 has a vehicle communication unit enabled to communicate in the primary communication mode; (Figs. 2-3, Blocks 210, 211, and 330; Page 13, Lines 1-3)

transmitting data between the first vehicle 211 and the second vehicle 210 via the short range wireless communication; (Figs. 2-3, Blocks 210, 211, and 340; Page 13, Lines 2-10) and

communicating the data with a service provider via a wireless carrier system 240 to request assistance for the first vehicle 211 using the vehicle communication unit 110 on the second vehicle 210. (Figs. 1-3, Blocks 110, 210, 211, 240, 270 and 340; Page 11, Lines 28-29; Page 13, Lines 13-16)

Independent Claim 31 –

Independent claim 31 generally pertains to a method 300 for operating a vehicle communication unit 110 within a mobile vehicle communication system 100, 200. (Figs. 1-3, pages 8-13) In general, the method 300 comprises the following steps:

attempting to operate a first vehicle communication unit on a first vehicle 211 in a primary communication mode; (Figs. 2-3, Block 211; Page 8, Lines 16-17; Page 12, Lines 11-14)

detecting a primary communication mode failure due to degraded equipment on the first vehicle 211; (Figs. 2-3, Block 211; Page 9, Lines 24-28; Page 12, Lines 11-14)

initiating a second communication mode using a local wireless link between the first vehicle 211 and a second vehicle 210 responsive to the primary communication mode failure, wherein the second vehicle 210 has a second vehicle communication unit configured to communicate using the primary communication mode; (Figs. 2-3, Blocks 210, 211, and 330; Page 9, Lines 17-23; Page 13, Lines 1-8)

sending a request for assistance for the first vehicle 211 to a service provider via a wireless communication system 240 using the second vehicle communication unit; (Figs 2-3, Blocks 211, 240, 270; Page 11, Lines 22-24 and 28-29) and

communicating data to complete the request for assistance between the first vehicle 211 and the second vehicle 210 using the second communication mode. (Figs. 2-3, Blocks 210, 211, and 340; Page 13, Lines 12-16)

Although the Appellants have provided the summary of claimed subject matter with references to specific embodiments of the invention to comply with the requirements set forth in the relevant provisions of 37 C.F.R., this summary has been provided to aid the Board in evaluating the appeal and is not intended to limit the meaning or definition of any terms in the claims. Furthermore, it should be appreciated that the above-provided reference numerals and pages/line numbers are only for exemplary purposes, as other instances and/or embodiments of the claimed elements could appear elsewhere in the application.

(vi) Grounds of Rejection to be Reviewed on Appeal

The single issue on appeal is whether claims 22-39 are unpatentable under 35 U.S.C. §103(a) as being obvious over Tzamaloukas in view of Fette et al.

(vii) Argument

Claims 22-39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tzamaloukas in view of Fette et al. The Appellants respectfully traverse this rejection for at least the following reasons: 1) the Wireless Wide Area Network (WWAN) link as taught by Tzamaloukas is not Appellants' "Primary Communication Mode," as argued by the Examiner, 2) Tzamaloukas fails to disclose Appellants' step of initiating short range wireless communication between the first vehicle and a second vehicle in response to the primary communication mode failure, where the second vehicle has a vehicle communication unit enabled to communicate in the primary communication mode, and 3) the Examiner's combination of Tzamaloukas and Fette is improper.

1) Claims 22-39—The Wireless Wide Area Network (WWAN) link as taught by Tzamaloukas Does Not Disclose Appellants' "Primary Communication Mode"

Tzamaloukas discloses using an optional WWAN (cellular) link only in specific and limited situations, and does not disclose the WWAN as a "primary communication mode." However, Appellants' primary communication mode clearly involves an analog or digital mobile telephone service.¹ For instance, Tzamaloukas discloses the optional WWAN link as present only on a small percentage of vehicles.² A mode present on a fraction of the vehicles cannot be conversely described as the primary mode of communication for those vehicles. And on the small percentage of vehicles, Tzamaloukas only discloses three situations in which the WWAN is used. Specifically, these situations include 1) when data collected by the on-board equipment is very large in quantity and could create storage capacity issues; 2) when the on-board equipment is unable to communicate the data to other participating vehicles or to an egress point; or 3) when on-board equipment needs to request data but is not within range of other participating vehicles or egress points.³ None of these situations suggest that the WWAN link is a primary communication mode.

¹ Appellants' Patent Application, page 8, lines 17-19.

² Tzamaloukas, col. 6, lines 17-19 and 27-29.

³ Tzamaloukas, col. 6, lines 31-39.

The Examiner further confuses the term “primary communication mode” by describing Appellants’ step of “detecting a primary mode failure” in terms of short-range wireless communications. To support the Examiner’s rejection of this claim limitation, he points to a section of Tzamaloukas that teaches a negative acknowledgement in response to a failure to receive packet data.⁴ But Tzamaloukas teaches packet data communications between vehicles and egress points using IEEE 802.11 short-range wireless protocols.⁵ This would mean that, Tzamaloukas’ primary communication mode is short range wireless communications based on the IEEE 802.11 standard.⁶ As a result, the Examiner cannot characterize the primary mode of communication as WWAN for one element of Applicants’ claim and 802.11 for another element.

2) Tzamaloukas fails to disclose Appellants’ step of initiating short range wireless communication between the first vehicle and a second vehicle in response to the primary communication mode failure, where the second vehicle has a vehicle communication unit enabled to communicate in the primary communication mode.

In fact, Tzamaloukas teaches the opposite. Instead of initiating short range wireless communications between a first and second vehicle when cellular communications fail, in two of the three described situations where the WWAN link is used, Tzamaloukas discloses sending data via cellular communications when the short range wireless network fails. As noted above, two of the limited situations where Tzamaloukas uses a WWAN link is when the on board equipment is unable to communicate data to or not in range of other participating vehicle or egress points. In the third situation disclosed by Tzamaloukas, a vehicle uses the WWAN to directly send data to a server. As a result, all of the above-mentioned limited situations involve a vehicle sending data directly to a central server, not to a second vehicle that then sends data to a central server.

The Examiner only offers a section of Tzamaloukas that teaches vehicles exchanging different types of information.⁷ But regardless of the type of information sent, Tzamaloukas fails to disclose the modes with which the information is sent. The disclosure in Tzamaloukas does

⁴ Final Office Action, page 4, line 14; Tzamaloukas, fig. 17(c); col. 22, lines 9-11.

⁵ Tzamaloukas, col. 20, lines 55-59 and col. 21, lines 40-44.

⁶ Tzamaloukas, U.S. Patent No. 6,925,378, col. 6, lines 16-22.

⁷ Final Office Action, page 2, line 14-page 3, line

not explain Appellants' use of a primary communication mode and short range wireless transmission to transmit data. For instance, Appellants' claim involves a first vehicle detecting that it cannot send a data transmission via its primary communication mode (e.g., cellular communication). The first vehicle then sends the data transmission to a second vehicle via short-range wireless communications, where the second vehicle communicates the data transmission to a service provider using the primary communication mode. While Tzamaloukas does disclose wirelessly sending information between two vehicles via a short range wireless protocol, the information is not sent in response to a primary communication mode failure, nor is there any suggestion from the prior art to do so.

3) The Examiner's Combination of Tzamaloukas and Fette is Improper.

As noted in Appellants' last response, the combination of steps in Appellants' claims are neither disclosed nor suggested in the prior art of record. The Office Action states that Tzamaloukas discloses most elements of claim 22, except that it does not disclose "communicating the data with a service provider via a wireless carrier system to request assistance for the first vehicle using the vehicle communication unit on the second vehicle."⁸ However, this excerpt from Fette does not specifically teach this claimed step; rather, it teaches utilizing a repeating subscriber node acting as a repeater to complete a cellular connection between a first subscriber node and a base node.

Given this teaching of Fette, the combination of Tzamaloukas and Fette suggested in the Final Office Action is improper. In Tzamaloukas, participating vehicles communicate floating car data with a central server via a wireless wide area network link.⁹ The participating vehicles may communicate with fixed egress points or other participating vehicles acting as mobile egress points.¹⁰ As indicated in a GPS location example, a participating vehicle having GPS but unable to determine its position (e.g., because of tall buildings), can use dead reckoning as well as link quality information from nearby wireless access points to determine its location.¹¹

⁸ Final Office Action, page 4, line 21-page 5, line 3; Fette, U.S. Patent No. 5,612,948, fig. 1, col. 3, lines 42-57.

⁹ Tzamaloukas, col. 4 lines 25-32.

¹⁰ Tzamaloukas, col. 3 lines 25-38.

¹¹ Tzamaloukas, col. 7, line 39-col. 8.

Conversely, in Fette, a cellular network includes subscriber nodes (16') acting as repeaters for a base node (12). If a subscriber node (16) cannot directly communicate with the base node (12), their communications may be indirectly routed to the base node through one or more repeating subscriber nodes (16') in communication with the base node.¹²

If one of ordinary skill in the art were to apply the teachings of Fette to Tzamaloukas, it would be to use Fette's repeater approach to communicate data between Tzamaloukas' vehicles and central server via either the fixed or mobile egress points. That is, applying the teachings of Fette to Tzamaloukas would require one vehicle in Tzamaloukas to act as a repeater for a communication from a second vehicle. If one vehicle were to act as a repeater for the other, as taught in Fette, then the type of communication between the vehicles and from one vehicle to the central server in Tzamaloukas would be the same. However, there is nothing in Tzamaloukas or Fette that would suggest using a secondary communication mode between the two mobile stations (e.g., vehicles) and then a primary communication mode (for which the first vehicle is equipped, but which has failed) to communicate between the second vehicle and central node. In the arrangement that is being claimed by Appellants, the second vehicle is not being used as a repeater of a cellular call as in Fette, but rather is receiving a short range wireless communication from the first vehicle and then transmits the data received via that communication to the call center using a cellular or other wireless carrier system. Thus, unlike either Tzamaloukas or Fette, the method of claim 22 is not using a single wireless communication approach to relay or repeat information to a central node, but is detecting that one communication approach (e.g., cellular call) has failed and so uses a second communication approach (e.g., short range packetized wireless) to communicate with another vehicle that is able to successfully use the primary communication approach to reach the call center to request assistance for the first vehicle.

Moreover, there is no proper basis for asserting that one of ordinary skill in the art would take from these two references the idea that you could use one communication approach to communicate between two vehicles and the other communication approach to contact a central facility. There is no advantage of doing so that is evident from either reference or the other prior

¹² Fette, U.S. Patent No. 5,612,948, col. 3 lines 42-47.

art of record, and one of ordinary skill in the art would have no incentive, motivation or other legally-supportable reason to implement such a communication approach based on the cited references. In this regard, Appellants note that the motivation given in the Final Office Action at the top of page 5 to combine Fette with Tzamaloukas would lead one of ordinary skill in the art to combine the teachings as noted by Appellants above in the preceding paragraph; i.e., to use other vehicles as repeaters using a single communication approach for all connections, as taught by Fette.

Accordingly, Appellants respectfully submit that independent claim 22 patentably defines over the prior art. Claims 23-30 each ultimately depend from claim 22. The Final Office Action rejected independent claim 31 for substantially the same reasons as claim 22 and while claim 31 has different limitation than claim 22, the above arguments are equally applicable. Claims 32-39 depend from claim 31. In view of claims 22 and 31, and at least for the reasons articulated above, Appellants respectfully submit that claims 22-30 and 32-39 are patentable over the prior art.

Other Claim Features

Aside from their dependence on independent claims 22 and 31, dependent claims 25 and 34 each recite a primary communication mode that comprises a cellular wireless connection. At least for the reasons articulated above, claims 25 and 34 should be independently patentable over the cited references. Furthermore, claims 24 and 33 recite detecting the primary communication mode failure by determining that a GPS unit within the vehicle communication unit is unable to receive a GPS satellite broadcast from a GPS satellite broadcast system. Nothing in either cited reference discloses or teaches this step. The Examiner points to a section in Tzamaloukas that describes determining the location of a vehicle when that vehicle cannot receive GPS signals when in an area of poor GPS reception.¹³ But the lack of GPS signal reception does not, by itself disclose Appellants' step. What the Tzamaloukas reference teaches and what Applicants' claims recite are significantly different. Tzamaloukas discloses using the lack of GPS signals to begin enhanced dead reckoning for determining a vehicle location. Appellants, on the other hand, use the lack of a GPS satellite broadcast to detect a primary communication mode failure. The

¹³ Final Office Action, pages 5-6; Tzamaloukas, col. 8, lines 1-11.

reaction to an absence of GPS signals taught by Tzamaloukas fails to anticipate the claimed subject matter of Appellants' claims 25 and 34. Accordingly, Appellants respectfully submit that dependent claims 24-25 and 33-34 are patentable over the cited prior art for reasons independent of those articulated for independent claims 22 and 31.

Conclusion

In view of the foregoing, Appellants request that the rejections of all claims be overturned and the claims be held allowable.

The Commissioner is authorized to charge any fees, or refund any overpayments, associated with this Appeal Brief to Deposit Account No. 07-0960.

Respectfully submitted,

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(viii) Claims Appendix

1-21. (Cancelled)

22. A method for operating a vehicle communication unit within a mobile vehicle communication system, the method comprising:

attempting to operate in a primary communication mode using a vehicle communication unit on a first vehicle, wherein the communication unit is equipped to communicate in the primary communication mode;

detecting a primary communication mode failure;

initiating short range wireless communication between the first vehicle and a second vehicle responsive to the primary communication mode failure, wherein the second vehicle has a vehicle communication unit enabled to communicate in the primary communication mode;

transmitting data between the first vehicle and the second vehicle via the short range wireless communication; and

communicating the data with a service provider via a wireless carrier system to request assistance for the first vehicle using the vehicle communication unit on the second vehicle.

23. The method of claim 22, wherein detecting the primary communication mode failure comprises:

detecting if the vehicle communication unit cannot initiate contact with a wireless carrier system; and

detecting if the vehicle communication unit cannot maintain communication with the wireless carrier system.

24. The method of claim 22, wherein detecting the primary communication mode failure comprises determining that a GPS unit within the vehicle communication unit is unable to receive a GPS satellite broadcast from a GPS satellite broadcast system.

25. The method of claim 22, wherein the primary communication mode is a cellular wireless connection.

26. The method of claim 22, wherein the secondary communication mode is a wireless connection using a communication protocol selected from the group consisting of: IEEE 802.11 series standard, Dedicated Short Range Communication standard, and Bluetooth.

27. The method of claim 22, wherein the transmitting step further comprises communicating data from the first vehicle to the second vehicle via the secondary communication mode.

28. The method of claim 22, wherein the transmitting step further comprises communicating data from the second vehicle to the first vehicle via the secondary communication mode.

29. The method of claim 22, wherein the communicating step further comprises sending the transmitted data from the second vehicle to the wireless carrier system via the primary communication mode.

30. The method of claim 22, wherein the communicating step further comprises sending data from the wireless carrier system to the second vehicle via the primary communication mode.

31. A method for operating a vehicle communication unit within a mobile vehicle communication system, the method comprising:

- attempting to operate a first vehicle communication unit on a first vehicle in a primary communication mode;

- detecting a primary communication mode failure due to degraded equipment on the first vehicle;

- initiating a second communication mode using a local wireless link between the first vehicle and a second vehicle responsive to the primary communication mode failure, wherein the second vehicle has a second vehicle communication unit configured to communicate using the primary communication mode;

sending a request for assistance for the first vehicle to a service provider via a wireless communication system using the second vehicle communication unit; and

communicating data to complete the request for assistance between the first vehicle and the second vehicle using the second communication mode.

32. The method of claim 31, wherein detecting the primary communication mode failure comprises:

detecting if the first vehicle communication unit cannot initiate contact with a wireless carrier system; and

detecting if the first vehicle communication unit cannot maintain communication with the wireless carrier system.

33. The method of claim 31, wherein detecting the primary communication mode failure further comprises determining that a GPS unit within the first vehicle is unable to receive a GPS satellite broadcast from a GPS satellite broadcast system.

34. The method of claim 31, wherein the primary communication mode is a cellular wireless connection.

35. The method of claim 31, wherein the secondary communication mode is a wireless connection using a communication protocol selected from the group consisting of: IEEE 802.11 series standard, Dedicated Short Range Communication standard, and Bluetooth.

36. The method of claim 31, wherein the sending step further comprises sending a request from the second vehicle to a wireless carrier system via the primary communication mode.

37. The method of claim 31, wherein the sending step further comprises receiving a response to the request at the second vehicle via the primary communication mode.

38. The method of claim 31, wherein the communicating step further comprises sending data from the first vehicle to the second vehicle via the secondary communication mode.

39. The method of claim 31, wherein the communicating step further comprises sending data to the first vehicle via the secondary communication mode from the second vehicle, wherein the second vehicle received the data from a wireless communication system in response to the request for assistance.

(ix) Evidence Appendix

(x) Related Proceedings Appendix